

Chapter Six – Assessment of Changes Impeding Visibility Progress (40 CFR 51.308(g)(5))

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6.1 Status Summary

This chapter evaluates visibility conditions measured at JARB1 from the baseline to the 2008 through 2012 progress period, and triennial NEI years from 2002 to 2011 (and 2012 for Nevada point sources) to determine if progress has been impeded by changes in anthropogenic emissions within the State. It further considers changes in anthropogenic emissions, or the status of BART,

51.308(g) . . . Periodic progress reports must contain at a minimum . . .

(5) An assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility.

in neighboring states that could affect progress at the Jarbidge WA. Finally, Nevada's contribution to Class I areas in nearby states is reviewed. Nevada concludes that progress towards achieving its 2018 visibility conditions goal has not been impeded by any significant anthropogenic emissions changes within or outside the State.

6.2 Significant Emission Changes within Nevada

40 CFR 51.308(g)(5) requires “[a]n assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility.” Figure 6-1 shows the baseline and rolling 5-year averages of speciated light extinction at JARB1 for the 20 percent worst days from 2005 through 2012. Figure 6-2 presents similar information, but for the best days. For the worst days, the data show a reduction in sulfate and nitrate for the three most recent 5-year periods (see also the assessment of visibility conditions at Jarbidge WA in Chapter Four). Figure 6-1 also shows very clearly how the worst days data is influenced by natural sources from year to year. Note how the most recent rolling 5-year average data is skewed by an exceptionally high year of wildfires (particulate organic matter) in 2012, contributing to an increase of more than 2.5 Mm^{-1} from the preceding 5-year average (discussed in detail in Chapter Four).

For the best days, there are noticeable reductions in visibility impairment due to sulfate, nitrate, particulate organic matter, and elemental carbon from the baseline to the current planning period. Light extinction for soil, coarse mass and sea salt remain fairly constant for the best days.

Figure 6-1. Worst Days for Baseline and Rolling 5-Year Averages Speciated Light Extinction through Planning Period Measured at JARB1

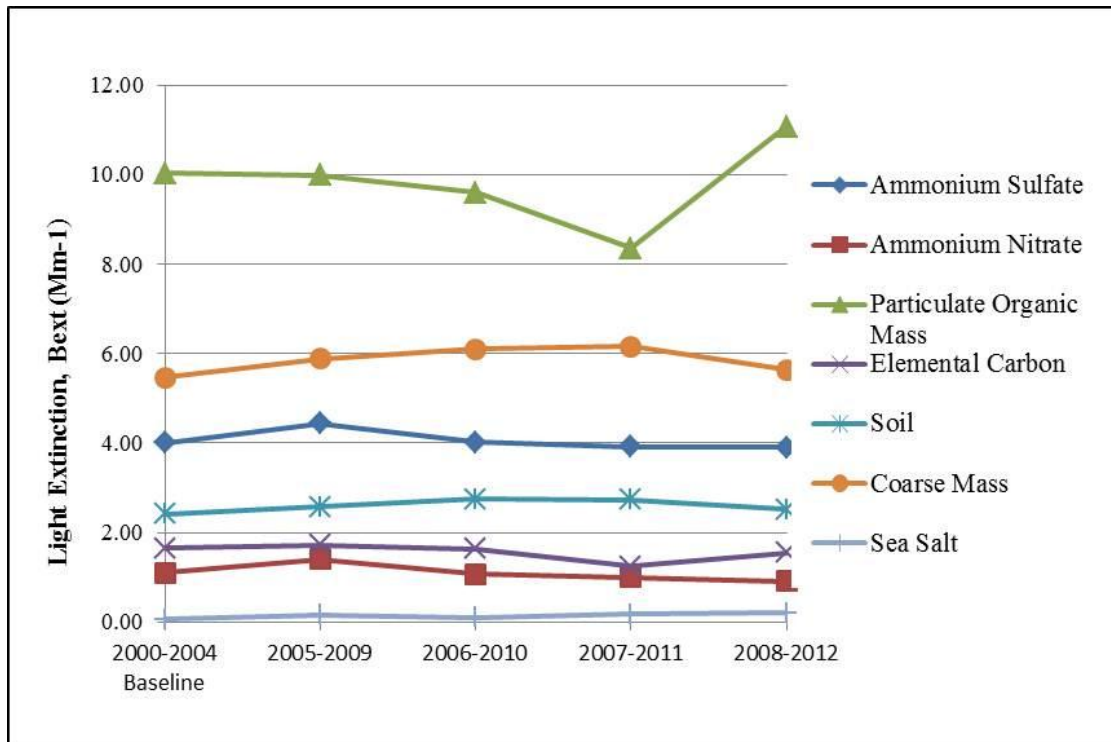


Figure 6-2. Best Days for Baseline and Rolling 5-Year Averages Speciated Light Extinction through Planning Period Measured at JARB1

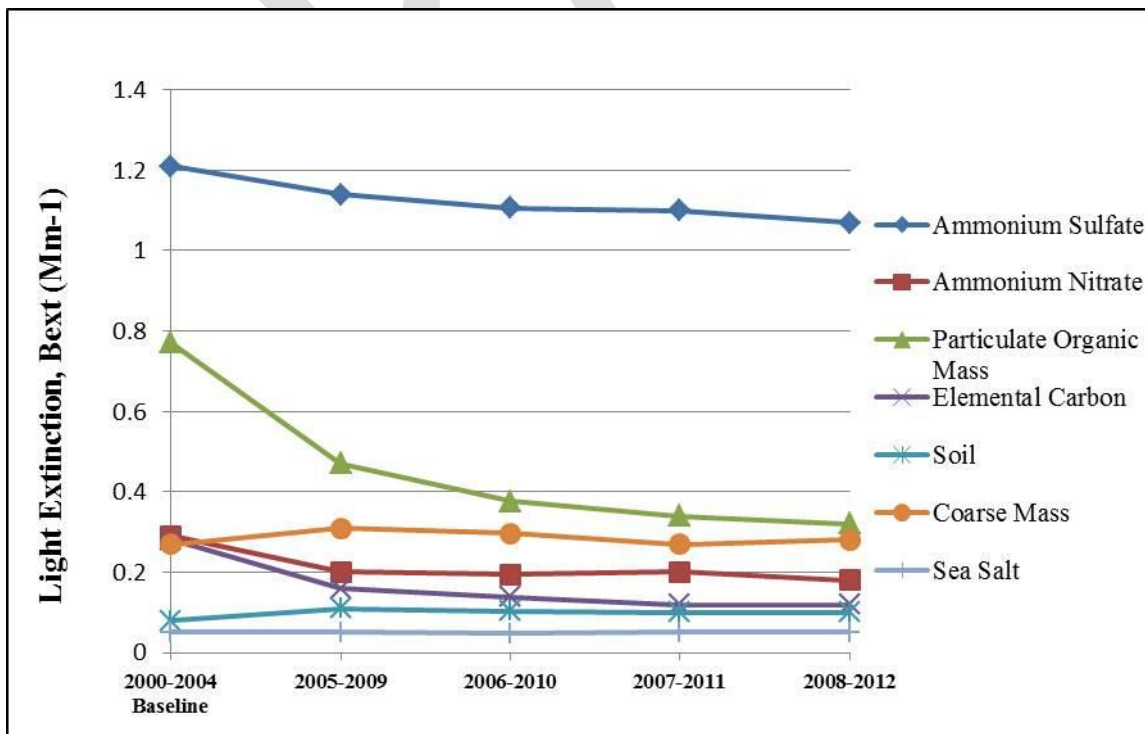


Table 6-1 presents actual emissions in tons per year for Nevada point sources for SO₂, NO_x, PM₁₀ and VOC for years 2002, 2005, 2008, 2011 and 2012. Years 2002, 2005, 2008 and 2011 were chosen as they are the most complete inventory years submitted to USEPA for the NEI. 2012 was the most recent dataset available for Nevada's point sources. It is noteworthy that for all four pollutants, there has been a decrease realized in actual emissions over the ten-year period. SO₂ decreased by nearly an order of magnitude and NO_x decreased almost seven-fold. Further reductions are expected as BART is implemented in Nevada. These reductions in emissions could only help to assist the progress toward improving visibility, not impede it.

Table 6-1. Actual Emissions (tpy) for Nevada Point Sources 2002, 2005, 2008, 2011, 2012*

Year	SO ₂	NO _x	PM10	VOC
2002	50,619	55,876	6,868	2,132
2005	54,243	52,087	4,643	1,646
2008	10,497	21,680	3,465	1,600
2011	5,959	10,548	3,331	971
2012	5,278	8,324	2,629	986

*2002 through 2011 data are actual emissions values submitted by the NDEP to the NEI. 2012 data are actual emissions values for major and minor point sources from the NDEP permitting database.

6.3 Non-Nevada Sources Impacting the Jarbidge Wilderness Area

Chapter Two discusses the status of implementation of proposed regional haze control measures, including Section 2.5.2, which specifically addresses the status of BART implementation in states adjacent to Nevada that may impact Jarbidge WA. Because of the location of the Jarbidge WA, it is likely more strongly affected by emissions originating from within the Snake River Plain than those emitted from within the Great Basin (see Chapter Two). 2018 source apportionment modeling, discussed in Chapter 4 of Nevada's 2009 RH SIP and summarized in Table 4-5 of that document, indicates that Idaho is the second largest contributor (contributing 10.3 percent) to modeled sulfate concentrations at JARB1 on the worst days and Oregon is the third (contributing 7.2 percent) (Outside Domain is first at 43.8 percent). Idaho is the highest contributor to modeled nitrate concentrations at JARB1 on the worst days (Outside Domain is next at 27.5 percent). Therefore, this section discusses the changes to anthropogenic emission sources in Idaho and Oregon focusing on the implementation of BART during this first 5-year progress period.

As discussed in Section 2.5.2, two facilities in Idaho were subject to BART: the Monsanto/P4 Production in Soda Springs and the Amalgamated Sugar Company (aka TASCOP Nampa) in Nampa. The emissions changes resulting from BART implementation at these facilities are detailed below and summarized in Table 6-2.

Table 6-2. Comparison of Projected 2018 and Actual 2011 Emissions from BART Facilities in Idaho and Oregon

Facility	NO _x (tpy)		SO ₂ (tpy)	
	PRP18a	2011 NEI	PRP18a	2011 NEI
Monsanto/P4	2,231	2,520	3,397	1,020
Amalgamated Sugar (TASCO)*	151	1,042	75	1,659
Boardman**	4,960	4,049	3,235	13,103

* BART compliance required by July 22, 2016.

** BART compliance required by July 1, 2014.

At the Monsanto/P4 facility, no new NO_x controls were required for BART, and existing SO₂ controls were determined to be BART. Emissions of NO_x in the PRP18a inventory were predicted to increase by 700 tpy from the Plan 02d inventory, while SO₂ emissions were predicted to decrease by 8,800 tpy. Emissions reported in the 2011 NEI for NO_x are consistent with the projected PRP18a inventory, while SO₂ emissions are even lower than predicted. Annual NO_x emissions in the projected 2018 inventory are 2,231 tpy with actual emissions of 2,520 tpy reported in the 2011 NEI, while annual SO₂ emissions were projected to be 3,397 tpy with actual emissions of 1,020 tpy reported in the 2011 NEI.

SO₂ emissions from the TASCO Nampa facility were predicted to increase 27 tpy, and NO_x emissions by 54 tpy from the Plan02d to PRP18a inventories. However, emissions reported in the 2011 NEI are much greater than those in the projected PRP18a inventory. Projected 2018 annual NO_x emissions were 151 tpy and actual 2011 emissions were 1,042 tpy; projected 2018 annual SO₂ emissions were 75 tpy and 2011 actual emissions were 1,659 tpy. Thus, the TASCO Nampa facility emitted more pollutants in 2011 than projected in the PRP18a inventory. However, full compliance with BART is not required until July 22, 2016 and is fully expected. Thus, one of Idaho's BART facilities is currently achieving the emissions reductions which Nevada depended on in setting its RPG, while a second BART facility in Idaho is not, yet.

As discussed in Section 2.5.2, one facility in Oregon was subject to BART: the PGE Boardman Power Plant (Boardman). The emissions changes resulting from BART implementation at this facility are detailed below and shown in Table 6-2Table 6-2.

SO₂ emissions from Boardman were projected to decrease by 9,013 tpy and NO_x emissions to decrease by 3,418 tpy from the Plan02d to the PRP18a inventory. However, SO₂ emissions reported in the 2011 NEI are much greater than those in the projected PRP18a inventory. The projected 2018 annual SO₂ emissions are 3,235 tpy, while SO₂ emissions reported in the 2011 NEI are 13,103 tpy. Boardman's actual NO_x emissions are lower than the 2018 projection of 4,960 tpy at 4,049 tpy reported for 2011. Thus, the Boardman facility emitted more SO₂ and less NO_x in 2011 than projected in the PRP18a inventory. However, compliance with the BART SO₂

emission limitation is not required until July 1, 2014, and significant SO₂ reductions are anticipated when the facility resumes operations in 2014 with the required controls.

NDEP staff spoke with Doug Walsh, Senior Environmental Engineer with the Oregon Department of Environmental Quality Eastern Regional Office in Pendleton, Oregon, regarding the status of implementation of SO₂ controls (phone conversation with Frank Forsgren, NDEP, on August 19, 2014). Mr. Walsh informed the NDEP that the facility had resumed operations and was refining operation of the SO₂ controls and undergoing testing. At this time there is insufficient data to confirm that the Boardman facility is meeting the BART SO₂ emission limits.

Table 6-2 presents the 2018 projected emissions and 2011 actual emissions for the three subject-to-BART facilities located in Idaho and Oregon. The sum of actual 2011 NO_x emissions from these facilities is a few hundred tpy greater than the 2018 projected emissions, while the sum of 2011 actual SO₂ emissions is more than 9,000 tpy greater than the 2018 projected emissions. Note that 2011 precedes the compliance dates for TASC0 and Boardman.

Because visibility impairment resulting from nitrate and sulfate is trending downward at Jarbidge WA and emission reductions from BART controls in Idaho and Oregon are either in accordance with the projected 2018 inventory or are expected to be before 2018, Nevada concludes that there are no significant changes in anthropogenic emissions from outside the State that are impeding progress at Jarbidge WA.

6.4 Nevada's Impacts on Nearby Class I Areas

This section reviews Nevada's impacts on nearby Class I areas based on particulate source apportionment modeling conducted by the WRAP. Analysis of the data demonstrates that Nevada is reducing its contributions to neighboring states consistent with its impacts. Section 4.3.3 of Nevada's 2009 RH SIP discusses the results of the source apportionment modeling and identifies Nevada's contributions to modeled sulfate (Table 4-3) and nitrate (Table 4-4) at all Class I areas in the five states adjacent to Nevada. The tables show Nevada's extinction contribution (as a percentage) for the best and worst days for 2002 and 2018. Nevada's maximum 2018 best days sulfate contribution (7.2 percent, the fourth largest contributor at this site) occurs at the Sawtooth Wilderness Area in Idaho and for the worst days at Zion National Park in Utah (5.6 percent, the sixth highest contributor). For nitrate, Nevada's maximum 2018 best days nitrate contribution (12.4 percent, the fourth largest contributor) occurs at Joshua Tree National Park and for the worst days at Bliss State Park (20.0 percent contribution, 3 highest contributor) in California. The Bliss IMPROVE monitor represents the Desolation Wilderness Area and Mokelumne Wilderness Area in California. Table 7-6 of the 2009 RH SIP shows Nevada's share of required emissions reductions to achieve reasonable progress goals at nearby Class I areas.

Chapter Five of this document summarizes the changes in emissions from all sources within the State resulting from the implementation of Nevada's 2009 RH SIP. Tables 5-5 through 5-15

present the 2002 and 2008 emission inventories and the difference between the two for each visibility impairing pollutant. Table 5-5 documents a 75 percent reduction in the state-wide sulfur dioxide emissions, while Table 5-7 presents similar data for nitrogen oxides and documents a 26 percent reduction in state-wide nitrogen oxide emissions. These emissions reductions far exceed Nevada's contribution to visibility impairment in Class I areas in the five adjacent states.

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